

Europäisches Patentamt

European Patent Office

Office européen des brevets



(11) **EP 1 137 293 A3**

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3: 05.01.2005 Bulletin 2005/01

(51) Int Cl.7: H04N 13/00

(43) Date of publication A2: 26.09.2001 Bulletin 2001/39

(21) Application number: 01106345.0

(22) Date of filing: 16.03.2001

(84) Designated Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU

MC NL PT SE TR

Designated Extension States:

AL LT LV MK RO SI

(30) Priority: 21.03.2000 JP 2000078744 17.01.2001 JP 2001009308

(71) Applicant: Olympus Corporation Shibuya-ku, Tokyo (JP)

(72) Inventors:

 Nakamura, Tomoyuki Hachioji-shi, Tokyo (JP)

 Komiya, Yasuhiro Hino-shi, Tokyo (JP)

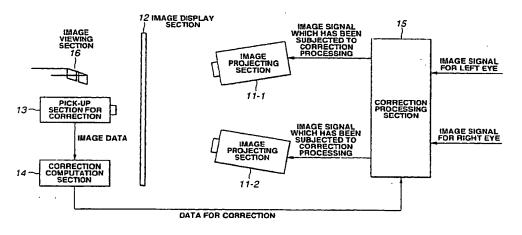
(74) Representative: Käck, Jürgen, Dipl.-Ing. Kahler Käck Mollekopf Patentanwälte Vorderer Anger 239 86899 Landsberg (DE)

(54) Stereoscopic image projection device

(57) Images for adjustment are projected onto an image display section 12 by image projecting sections 11-1, 11-2 for a left eye and a right eye. The image projecting sections 11-1, 11-2 are disposed such that projected image display ranges for the left eye and the right eye are substantially superposed. First, image projection at the image projecting section 11-2, which is one of the image projecting sections for the left eye and the right eye, is stopped, and one image for adjustment which is projected onto the image display section 12 is picked-up by a pick-up section 13 for correction. Next, image projection by the image projecting section 11-2,

at which projection had been stopped until then, is started, and a new image for adjustment projected on the image display section 12 is picked-up by the pick-up section 13 for correction. After pick-up has been completed, obtained image data is sent to a correction computation section 14 where, on the basis of the image data, computation is carried out to generate correction data for geometric distortion and positional offset. The correction data is sent to a correction processing section 15 where, on the basis of the correction data, correction processing is carried out on left and right inputted image signals.

FIG.1



Printed by Jouve, 75001 PARIS (FR)



EUROPEAN SEARCH REPORT

Application Number EP 01 10 6345

Category	Citation of document with it of relevant pass	ndication, where appropriate, ages	Relevant to claim	
Υ		TINGER AARON M ET AL)		1 H04N13/00
Y	* figures 1,3 * * column 3, lines 1 * column 6, lines 4 * column 11, lines	7-25 * 1-45 *	8,12	
Υ	US 5 231 481 A (DE AL) 27 July 1993 (1	COUASNON TRISTAN ET 993-07-27)	1-7,9-1	1
Y	* abstract *	-	8,12	
Y	US 5 497 054 A (RYU 5 March 1996 (1996- * abstract * * column 2, lines 2	03-05)	1-7,9-1	1
A	LTD) 1 March 1995 (* figure 12 *) 1	
	* page 12, lines 41		_	TECHNICAL FIELDS SEARCHED (Int.CI.7)
A	STEREOGRAMS" SYSTEMS & COMPUTERS TECHNICA JOURNALS. vol. 19, no. 9, 1 September 1988 (1 32-39, XP000009756 ISSN: 0882-1666 * paragraph '03.2!;	MINANT COLOR RANDOM-DOT IN JAPAN, SCRIPTA NEW YORK, US, 988-09-01), pages figure 5 *	2	H04N
A	US 5 091 773 A (FOU 25 February 1992 (1 * abstract; figures	992-02-25)		
	The present search report has	·	<u> </u>	
	Place of search The Hague	Date of completion of the search 15 October 2004	Ma	Examiner 10, P
X : part Y : part doce	ATEGORY OF CITED DOCUMENTS icutarly relevant if taken alone icutarly relevant if combined with anot ment of the same category motogical background	T: theory or princip E: earlier patent of after the filling of D: document cited L: document cited	ote underlying the ocument, but purate in the application for other reason	ne invention iblished on, or
O : non	metogical background written disclosure tmediate document			nily, corresponding

2



EUROPEAN SEARCH REPORT

Application Number EP 01 10 6345

Category		indication, where appropriate,	R	elevant	CLASSIFICAT	
Jacegory	of relevant pas	sages		claim	APPLICATION	
A	US 5 933 132 A (HA		2			
ļ	3 August 1999 (199				•	
	* abstract; figure	s 1,2 * 			•	
a	WO 99/14716 A (LIV	NI AVINOAM ; ALONI MEIR	2			
		SIM (IL); ROSENTHAL				
	AMIR) 25 March 199	9 (1999-03-25)				
	* abstract *					
Υ	WO 96/21883 A (NOV	ONAB OPTICA AB :	8.1	2		
į	BERGLUND STIG (SE))	'			
ĺ	18 July 1996 (1996-					
	* page 2, lines 24- * page 10, lines 20	-20 *)-23 *				
{	* page 17, lines 12	2,13; figure 1 *	-			
	* page 18, lines 7-	-15; figures 12-14 *				
Υ	WO 94/22050 A (NOVA	ONAB OPTICA AB :	8.1	2		
	BERGLUND STIG (SE))	, .	-		
)	29 September 1994 (1994-09-29)				
İ	* abstract * * page 2, lines 33-	-36 *	- {		TECHNICAL I SEARCHED	RELDS (Int.Cl.7)
-{	* page 15, lines 8-					
Y	WO 98/49837 A (LDT	SMRH & CO + JORKE	8,1	,		
• 1	HELMUT (DE)) 5 Nove	mber 1998 (1998-11-05)	[5,1	-		
ł	* page 9, lines 17-		1			
				1		
			ļ	- 1		
}				j		
				Ì		
1						
1				1		
1				Į	•	
			1			
}				ļ		
				ļ		
i		· · · · · · · · · · · · · · · · · · ·	\dashv		•	
	The present search report has					
	Place of search The Wague	Date of completion of the search		No	Examiner D	_
	The Hague	15 October 2004		Mao,		
	TEGORY OF CITED DOCUMENTS	T: theory or princi E: earlier patent d	ocument,			
Y : partic	adarly relevant II taken alone adarly relevant if combined with anot		in the ap			
A : techr	ment of the same category nological background	L: document cited				
	written disclosure nediate document	& : member of the document	same pat	ent lamily,	corresponding	

EPO FORM 1503 03.82 (P04C01)



Application Number

EP 01 10 6345

CLAIMS INCURRING FEES
The present European patent application comprised at the time of filing more than ten claims.
Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.
LACK OF UNITY OF INVENTION
The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:
see sheet B
All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



LACK OF UNITY OF INVENTION SHEET B

Application Number

EP 01 10 6345

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-7,9-11

stereoscopic projection device with feedback loop for distortion correction

2. claims: 8,12

stereoscopic projection device with broad color range

5

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 01 10 6345

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of Information.

15-10-2004

	Patent document ed in search report		Publication date		Patent family member(s)		Publication date
US	5502481	Α	26-03-1996	US	5537144		16-07-1996
				US	5553203	Α	03-09-1996
	•			ΑU	4159796	Α	06-06-1996
				US		A	14-12-1999
				WO	9615632	A1	23-05-1996
				US	6456432	B1	24-09-2002
				US	6011581	Α	04-01-2000
				US	2004036763	A1	26-02-2004
				US	6556236	B1	29-04-2003
				US	6034717	Α	07-03-2000
				US	5821989	Α	13-10-1998
				บร	6104447	Α	15-08-2000
				บร	5828427	A	27-10-1998
				US	5886816	A	23-03-1999
				US	6359664	B1	19-03-2002
				ÜS	6188460		13-02-2001
				ÜS	5844717		01-12-1998
US	5231481	A	27-07-1993	FR	2660090	A1	27-09-1991
	-			EP	0448480	A1	25-09-1991
us	5497054	Α	05-03-1996	KR	141232	B1	15-06-1998
				JP	3041202	B2	15-05-2000
				JP	7107500	A	21-04-1995
EP	0641132	A	01-03-1995	DE	69417824		20-05-1999
				DE		T2	12-08-1999
				EP	0641132	Al	01-03-1995
				EP	0888017	A2	30-12-1998
				JР	3089306	B2	18-09-2000
				JP	7167633	Α	04-07-1995
				KR	153214		16-11-1998
			•	US	5726704	Α	10-03-1998
				บร	5801760	Α	01-09-1998
US	5091773	A	25-02-1992	FR	2652695		05-04-1991
				ΕP	0421856		10-04-1991
				JP	3139985 	A 	14-06-1991
US	5933132	A	03-08-1999	US	5181015		19-01-1993
				AU	1445692		15-09-1992
				JP	5153532		18-06-1993
				MO	9215084		03-09-1992
				บร	5502459		26-03-1996
				US	5504501	Α	02-04-1996
				US	5594468		14-01-1997

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

6

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 01 10 6345

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

15-10-2004

	Patent document ted in search repor	1	Publication date		Patent family member(s)	Publication date
US	5933132	A		JP	2622620 B2	18-06-1
				JP	3167621 A	19-07-1
				US	5489923 A	06-02-1
				US	5515079 A	07-05-1
				ΑU	7857591 A	11-06-1
				CA	2095837 A1	10-05-1
			•	EP	0556179 Al	25-08-1
				JP	4260114 A	16-09-1
				WO	9209062 A1	29-05-1
WO	9914716	Α	25-03-1999	AU	743173 B2	17-01-2
				AU	8883098 A	05-04-1
				CA	2303128 A1	25-03-1
				CN	1279801 T	10-01-2
				EP	1023706 A1	02-08 - 2
				MO	9914716 A1	25-03-1
				JP	2002503892 T	05-02-2
WO	9621883	Α	18-07-1996	WO	9621995 A2	18-07-1
				WO	9621996 A2	18- 07- 1
				WO	9621997 A2	18-07-1
				MO	9621992 A2	18-07-1
		-		WO	9621883 A2	18-07-1
WO	9422050	A	29-09-1994	AU	6389494 A	11-10-1
				AU	6389594 A	11-10-1
				AU	6389694 A	11-10-1
				AU	6389794 A	11-10-1
				EP	0752123 A1	08-01-1
				EP	0733229 A1	25-09-1
				SE	9300958 A	24-09-1
	•			WO	9422050 A1	29-09-1
				MO	9422047 A1	29-09-1
				WO	9422049 A1	29-09-1
				WO	9422048 A1	29-09-1
				US	5730517 A	24-03-19
			AF 44 -AAA	~-	10000004 41	05-11-19
WO	9849837	Α	05-11-1998	DE	19808264 A1	
MO 	9849837	Α	05-11-1998	ΑU	7650198 A	24-11-19
WO	9849837	Α	05-11-1998	AU WO	7650198 A 9849837 A1	24-11-19 05-11-19
WO	9849837	A	05-11-1998	ΑU	7650198 A	24-11-1